

In the claims (Clean Version)

Please cancel claims 6 & 12. Please add claim 23

1. A burnable used oil fuel product by the process comprising:

- (a) obtaining a used oil sample having at least 1% (by weight) aqueous substances;
- (b) creating a used oil stream to form the used oil sample;
- (c) heating the used oil stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and
- (d) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

4. The burnable used oil fuel product of claim 3 wherein the microwave heating energy has a frequency of about 2.45 GHz.

5. The burnable used oil fuel product of claim 1 wherein the extraction step is performed in a trapping vessel having a bottom valve for removing bottom components and a means for regulating pressure, whereby water and extracted solid constituents are removed from a bottom vessel.

7. A process for recovering burnable used oil fuel from a used oil sample, process comprising:

- (a) obtaining a used oil sample having at least 1% (by weight) aqueous substances;
- (b) creating a used oil stream form the used oil sample without a dewatering step;
- (c) testing the used oil stream for an percentage of water;
- (d) when the used oil stream has greater than 4% water, microwave heating the used oil stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and
- (e) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

10. The process for recovering burnable used oil fuel from a used oil sample of claim 9 wherein the microwave heating energy has a frequency of about 2.45 GHz.

11. The process for recovering burnable used oil fuel from a used oil sample of claim 7 wherein the extraction step is performed in a trapping vessel having a bottom valve for removing bottom components and a means for regulating pressure, whereby water and extracted solid constituents are removed from a bottom vessel.

13. An apparatus for purifying waste oil, comprising:

(a) a preprocessing analyzer section connected to an input stream for waste oil and an output;

(b) a preprocessing switch controlled by the analyzer section having an input connected to an analyzer section output and an output, the preprocessing switch having a first output and a second output;

(c) a heating section connected to the first output of the preprocessing switch; and a microwave heating section connected to the second output; and

(d) a demulsification section connected to a heating output and having an output lower for settling.

14. The apparatus for purifying waste oil of claim 13 wherein the apparatus further comprises a preheating section connected before of the preprocessing switch.

17. The apparatus for purifying waste oil of claim 15 wherein the waveguide includes a straight member between a first end and a second end, the first end is a curved member having a 45° "H" plane bend of miter construction.

20. The apparatus for purifying waste oil of claim 19 wherein the apparatus further comprises an analyzer section after the pump that determines a percentage of water in the waste oil stream feed.

22. The apparatus for purifying waste oil of claim 21 wherein the microwave heating section further comprises a sensor connected to the microwave generator for determining an amount of reflected energy.

23(New). The process for recovering burnable used oil fuel from a used oil sample of claim 7, further including the steps of:

- (f) when the used oil stream is not greater than 4% water, conventionally heating the used oil stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and
- (g) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.